

The Democratic Social Ecology of Madhav Gadgil

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In no city of modern India is scholarship and social reform so interwoven as Pune. Here have lived and worked the pioneers of the Indian liberal tradition—Jotiba Phule, Gopal Krishna Gokhale, Tarabai Shinde, D.K. Karve, B.R. Ambedkar, and others—those who brought to wider attention the need for women's education, caste uplift, social service, and liberal values more generally. These were the luminaries, but ranking slightly below them is a range of other Punaikars (Pune citizens) who combined pursuit of knowledge with the desire for action. One such was the economist, sociologist, and institution-builder Dhananjaya Ramachandra Gadgil.

Born in 1902, Gadgil was educated at the universities of Bombay and Cambridge. At the latter he wrote an M.Litt dissertation which became a classic. Published in 1923 as *The Industrial Evolution of India in Recent Times*, it stayed in print a full seventy years. Among his other contributions to scholarship were many essays on economic policy and planning, and a landmark study of the sociology of business communities. Among his contributions to society were his founding of the Gokhale Institute of Politics and Economics and the nurturing of farmers' cooperatives in Maharashtra. From 1967 to 1970 he served as Deputy Chairman of the Government of India's Planning Commission, a post generally regarded as the summit of achievement for an applied economist in India.

D.R. Gadgil was a man of learning and courage. In 1946 he and the brilliant civil servant A.D. Gorwala were asked by the Government of Bombay to recommend measures to assure a fairer distribution of food in times of scarcity. While they deliberated Mahatma Gandhi announced that there was no need for state intervention in the distribution of food. Gadgil and Gorwala insisted that non-intervention by the state would promote hoarding and black-marketing. In this time of crisis, they argued, only rationing and fair price shops could bring grain within reach of the poor. To disagree with Gandhi took courage; but then Gadgil had plenty of that. As the columnist D.R. Karaka put

It would be difficult to find a truer picture of all that is best in the ancient Indian tradition than Gadgil. A slim, gaunt man, argumentative and aggressive on the right occasions, full of courage and with a wisdom grounded in deep knowledge of both theory and facts, Gadgil had devoted himself for many years to the building up of a true school of politics and economics, eschewing all profitable pursuit. On occasion after occasion he had turned down offers of employment by the government. He joined the Board primarily because he felt the situation in the country was so critical that a right

lead was essential and without the right lead it might become disastrous.

II

About ten years after D.R. Gadgil took on Mahatma Gandhi he was visited by Wassily Leontief, the Russian exile and founder of input-output analysis who is widely regarded as one of the greatest economists of the twentieth century. Leontief was giving a series of lectures at the Gokhale Institute and was a house guest of the Gadgils. One day the visitor struck up a conversation with his host's youngest son, a boy of thirteen named Madhav. "Young man, what will you do when you grow up?," asked Leontief. "I want to become a biologist," answered Madhav. "Wonderful, excellent!," commented the economist: "Never do what your father does—especially if your father is any good at what he does."

It is a pity that so few Indians follow this advice. Consider how the reputations of the politician Indira Gandhi, the musician Anoushka Shankar, and the cricketer Rohan Gavaskar have been so clouded by the vastly greater reputations of the parent who preceded them in the same profession. D.R. Gadgil agreed implicitly with Leontief and was partly responsible for orienting his son away from economics. He had an amateur's interest in nature, in birds particularly, and was a subscriber to the *Journal of the Bombay Natural History Society*. His son Madhav read the journal as it came to the house and juxtaposed its contents with what he saw in the wider world.

Even today, Pune has acres of green grass amidst all the concrete. There is, for example, the verdant campus of the University of Pune (formerly the residence of the Governor of Bombay), rich in trees and butterflies and birds. There are also large open spaces colonized by nature in the army cantonment. Fifty years ago Pune was greener still. Then, as now, it lay within easy range of the Western Ghats, otherwise known as the Sahyadri Mountains.

Once, on a hilltop in Italy overlooking Lake Como, I heard Madhav Gadgil speak to a band of international scholars about his lifelong love affair with the Sahyadris. He later expressed it in print: "Describing King Raghu's conquest of the four corners of India, Kalidasa likens the Western Ghats to a comely young maiden, her head near Kanyakumari, her feet near [the river] Tapi. I fell in love with this damsel at a tender age, maybe of three or four, and with time have grown more and more fond of her."

By his early teens Madhav Gadgil had decided to become a biologist. Toward this end he took a first degree in science from Ferguson College, Pune, and then a masters in zoology from Bombay University. In 1965 he proceeded to Harvard to enroll for a doctorate in ecology.

With him was his newly wedded wife, Sulochana, a Pune girl who had been admitted to Harvard for a PhD in mathematics.

In the 1950s and 1960s a distinguished member of the Harvard biology department was James Watson. Watson thought the future of biology, indeed of all science, lay in the laboratory. He had contempt for the field biologist, whom he saw as an unfortunate throwback to the world of the amateur naturalist. One of those at the receiving end of Watson's scorn was Edward O. Wilson. By the time Madhav Gadgil arrived at Harvard, however, Watson had left Harvard and evolutionary ecology was coming into its own. E.O. Wilson was one of the Indian's early mentors. His dissertation work, however, was done with W.H. Bossert on life history strategies. This was a pioneering attempt at applying mathematical modeling to ecology. One of the papers that grew out of this work became a "citation classic."

Two conversations I had in the late 1980s testify to the impact that Gadgil's early work had. One was in Delhi, with an Indian biologist of his generation, who claimed, or complained rather, that the math in that classic paper was the work of Gadgil's wife. The second conversation was in Berkeley, with an up and coming American biologist, who was disbelieving when I told him that Gadgil was based in India. For how could a man who did such cutting-edge work live anywhere but in the USA?

In fact the Gadgils had decided to return home shortly after completing their PhDs. This was unusual, but more striking was their decision not to have children in America, this perhaps a deeper mark of their patriotism, for Indians who choose to come back still usually have their children in America so as to give them an early escape route to the West.

In 1971 the Gadgils returned to their native Pune. Gadgil joined the Maharashtra Association for the Cultivation of Science. There was no teaching and the laboratory facilities were meager, so he decided to resume his acquaintance with the mountains around Pune. On a field trip in the Ghats he came across a small patch of primeval forest protected by the peasants as a sacred grove. However, the Forest Department wanted to acquire this grove preparatory to axing it.

The intensity of the villagers' feelings over that patch of forest led Gadgil to look for other such groves across Maharashtra. With his teacher V.D. Vartak he traveled the countryside, enumerating and studying the sacred groves that remained. Like Dietrich Brandis a century before him (see Chapter Four), Gadgil came to see these groves as examples of indigenous conservation. They were richer in plant and animal diversity than the surrounding vegetation, particularly with regard to climbers and epiphytes. "With the felling of forest all around them, the sacred groves have become the last refuge

of many plant species." Thus, their conservation was "desirable both from a practical and an aesthetic point of view."

In 1973 Sulochana Gadgil was offered a position at the Indian Institute of Science (IISc) in Bangalore. She had her husband's C.V. with her; in the event, both were asked to join the institute's newly established Centre for Theoretical Studies. The IISc is without question the leading center of scientific and technological research in India. The quality of its research and teaching has never been in dispute, though its relevance to society sometimes has: the world-class mathematicians, physicists, and biologists on its staff are oriented largely toward publication in Western journals that are little read in India, while the dozens of PhDs they annually produce more often than not end up in an American university, part of India's ever growing "brain drain."

The IISc is, for the most part, an island of West-centered excellence in an ocean of Indian poverty and drudgery. However, the year after the Gadgils joined, there arose a movement to "correct the urban bias" in the programs of the institute by fashioning a science for the rural poor. This led to the creation of the Centre for Appropriate Science and Technology for Rural Areas (ASTRA), whose prime mover was A.K.N. Reddy, Professor of Chemistry at the IISc.

Through the 1970s and 1980s ASTRA developed and widely disseminated a range of environmentally sound, low cost, decentralized technologies, as for example mud-block houses, biogas plants, and improved cooking stoves. On a more academic plane it conducted studies of the flow of energy and biomass in village ecosystems, mapping how peasants fulfilled material requirements from local environments.

Reddy himself was an early exponent of environmentally sound development. An essay of 1978 by him identified the goals of "eco-development" as, first, the satisfaction of basic needs, especially of poorer segments of the population; second, endogenous self-reliance, both in terms of using local raw materials and through social participation and control; third, harmony with the environment so as to ensure the long-term sustainability of the development process. In its work ASTRA was also alert to the sociological dimension; to the interplay of caste and gender within the village and to factors that constrained or promoted the social adoption of new technologies.

Like the folks at ASTRA, Gadgil was a scientist whose temperament took him away from the laboratory into the field. While still in Pune he had begun working with the anthropologist Kailash Malhotra on a study of the pastoralists of peninsular India. This, truly, was a marriage of disciplines, with concepts of territoriality and niche diversifi-

cation used to understand the human ecology and foraging strategies of shepherds and herders.

Fieldwork by Gadgil and Malhotra revealed that different endogamous groups living in the same region minimized competition through resource partitioning and exclusion. Thus, individual castes, and often individual families or lineages within them, were by custom assigned a monopoly over a particular resource in a particular territory. This reduced competition, fostered prudence, and helped maintain the stability of the system in the long run.

The work of Gadgil and Malhotra represented a cross-disciplinary collaboration unprecedented in the Indian academy. Ecologist and anthropologist, respectively, they were akin in their penchant for fieldwork and in their facility with languages—both speak superb Marathi and Hindi, and each speaks at least two other languages. Both were scientists with immense curiosity, interested in knowledge for knowledge's sake, but also public intellectuals keen that the fruits of such knowledge find application in social policy.

In 1980 the duo were asked by the newly established Department of Environment to survey the major environmental problems facing India. Characteristically, they went to the field to find out. They spent five weeks traveling around the countryside, visiting the Western Ghats and the Himalaya, the Rajasthan desert, the Central Indian forests, and the farmlands of the Deccan. They stayed away from the towns, choosing instead to talk to and stay with peasants, pastoralists, and fisher folk. The report they wrote provided a masterly overview of various forms of environmental degradation in contemporary India. Among the cases highlighted were water logging in the Narmada valley, pollution by chemical factories in Goa, and deforestation in the Himalaya. There was, they noted, widespread “overexploitation by commercial interests” who had a “tendency to externalise costs,” with the burden of these deprivations being borne by “impoverished masses eking out a subsistence.” Among the corrective measures they suggested were the democratization of natural resource management by involving local communities, and the assessment of large development projects by a comprehensive “techno-environmental-socio-economic” framework rather than by financial criteria alone. The Gadgil—Malhotra report was a precocious attempt at charting the elements of an environmentalism of the poor.

III

I first met Gadgil in the same summer that I first met Chandi Prasad Bhatt. He had come to the Forest Research Institute in Dehradun, where my father worked, to speak on social behavior among elephants. After he had finished I went up and introduced myself. We

had something to talk about for I had just begun research on the history of forest policy in India. It was a subject about which Gadgil knew a great deal.

Looking back at Gadgil's career after he returned from Harvard, I am tempted to divide it into three distinct phases: (i) indigenous conservation systems in the 1970s; (ii) forest policy in the 1980s; (iii) biodiversity and related issues in the 1990s.

As we saw earlier, through the 1970s his work was mainly on indigenous conservation systems, as exemplified by sacred groves and traditions of prudent resource use in the Deccan countryside.

In the 1980s, his second phase, Gadgil came to focus on forest policy. One of his first PhD students, S.N. Prasad, had written a dissertation on the disappearing bamboo stocks of northern Karnataka. This alerted Gadgil to serious biases in Indian forest policy caused in the main by the pressures of industrial demand. Thus, as Gadgil and Prasad discovered, bamboo was supplied by the state to paper mills at the subsidized rate of Rs 1 (about 2 cents) per ton. Basket weavers, meanwhile, had to buy the bamboo they needed in the open market, where the price prevailing was Rs 5000 (about \$110.00) per ton. This was not merely unjust but, from an ecological point of view, deeply irrational. Offered a massive subsidy, and not sure how long the offer would last, paper mills were encouraged to raid the bamboo forests and fell clumps, regardless of what this might mean for bamboo regeneration.

Through the 1980s Gadgil wrote a series of seminal papers on forest policy and forest management. These combined the perspectives of sociology and ecology, looking both at the scientific limitations of forestry as it was practiced and its wider implications in terms of social equity. On the historical side Gadgil's studies demonstrated the failures of sustained-yield management in the tropics. Whatever it may have been in its original home, Germany, scientific forestry in India was a pseudo science, lacking both the empirical base and the theoretical frame required to make sense of the diverse ecosystems which it faced. On the ecological side, Gadgil mounted a powerful critique of the destruction of mixed tropical stands and their replacement by monocultures of exotics like eucalyptus and tropical pine. In one case, in his beloved Western Ghats, the eucalyptus had been attacked by a fungal disease, converting rich tropical forest into a man-made desert. On the sociological side Gadgil showed that forest management in India had discriminated against the interests of peasants, pastoralists, and artisans, whose requirements of forest produce were always subservient to industrial demand.

Where other critics of forest policy were content merely to criticize, Gadgil sought ways in which these policies could be changed so as to harmonize competing demands. He identified three major claims on the forest: those of ecology, equity, and efficiency. These, he argued, could best be met through a tripartite physical demarcation. Some forest areas should be managed principally for maintaining biological diversity, other forest areas for meeting the long-neglected subsistence requirements of peasants, tribals, pastoralists, and artisans. As for the market demand for timber, this should be shifted wholly away from natural forests. Private farmers could be encouraged to grow commercial tree species on their holdings and supply direct to paper and plywood factories, ideally through the medium of marketing co-operatives. Rural producers might also be encouraged to undertake some wood processing. This would lead to a fairer distribution of market gains between city and countryside while allowing natural forests to regenerate without the threat of excessive pressure from commercial interests. These policies would also reduce corruption within the Forest Department—by reducing the discretionary power of its officials to award contracts for timber felling.

To be fair, Gadgil was by no means the only scholar working in this field. The 1980s witnessed an intense, acrimonious, but in the end productive debate on forest policy in India. Contributors to this debate included sociologists, foresters, lawyers, activists, and even some industrialists. But in my view it was Gadgil who provided the most original and insightful analyses of what was wrong in the forest sector. It was also the work of Gadgil that, in the end, had a lasting impact. The National Forest Policy, issued by the Government of India in 1988, bears the mark of his studies and recommendations, not least in its ecological focus (with clear felling being explicitly prohibited), as well as in its relative sensitivity to tribal and rural interests.

IV

In the winter of 1987-8 a coalition of NGOs in peninsular India hosted a “Save the Western Ghats March” (SWGM). The idea, originally, was Kalanand Mani’s. Mani was an activist from Bihar who had cut his teeth working with Jayaprakash Narayan’s anti-corruption movement of the 1970s and had since settled in Goa. Groups all along the Ghats joined in, from socialists in Maharashtra active on the range’s northern edges, to the Kerala Sastra Sahitya Parishad (KSSP)—a popular science movement that had long worked on the Ghat’s southern extremities. The chairman of the “central advisory committee” for the SWGM was Gadgil’s co-author, the anthropologist K.C. Malhotra. Also active in the march’s planning was Gadgil.

In November 1987 one group of marchers began its walk from Nawapur in Maharashtra. Simultaneously, another group began its way up the peninsula from its southernmost tip at Kanyakumari. Three months later they met at the town of Ponda in Goa. Each group covered in excess of 2000 kilometers, mostly on foot, except where the terrain grew too harsh, at which point buses and motorcycles were deployed. A dozen marchers from the south, and seventeen from the north, went the whole hog, being accompanied in segments by hundreds of other volunteers, these variously students, scientists, activists, and villagers. They walked, they watched, and they observed, keeping track of forms of environmental degradation, seeking to analyze causes and, where possible, the best ways of stopping or stemming this degradation.

Gadgil spent several weeks on the march. At the plenary meeting in Ponda he presented a magisterial paper on the ecology and biodiversity of the Western Ghats. This analyzed its soil structure, hydrology, and vegetation, as well as the threats posed to its integrity by the demands of industry, mining, plantations, and commercial agriculture. Based on the feedback he received at this meeting, Gadgil then formulated a “follow-up action plan” for the marchers. He outlined a range of thirteen specific programs to be taken up, covering both “ecological objectives” such as biodiversity conservation, and “social objectives” such as equitable access. This plan sought to accommodate the diversity of ideologies represented at Ponda, with some marchers seeking return to a rural past, but others in favor of encouraging modern industry with adequate environmental safeguards.

Gadgil’s own preference was for an inclusive approach, “with a broad involvement of all cross sections of the society” and the environmental ideologies that matched these. He suggested the formation of an umbrella group, to be called the “Consortium of Voluntary Agencies for Sustainable Development of Western Ghats” perhaps, or—a shorter Indian alternative—“Paschimadri Parisara Samudaya.” By whatever name, any such consortium had to work with a range of other institutions. These could include local schools and colleges, which at present had “little to do with problems either of their immediate environment or of the society,” yet which “have however great potential for constructive work;” local representative bodies such as village and district councils; the armed forces and industry, which had “an overwhelming impact on the environment and the society of the Western Ghats;” and local farmers whose practices were not always benign in their impact on the environment.¹⁶

Gadgil prefaced his proposal with a warning: any follow up, he said, must “consider not only what is desirable but also what is feasible.”

This was a coded, or perhaps not so coded, reference to the “purism” of the environmental movement, its tendency to postulate impractical and Utopian solutions, its inability to get along with other groups in society and, on occasion, even with its own diverse constituents. The catholic and collaborative approach recommended by Gadgil was, it appears, deeply uncongenial to the majority of the marchers. The follow-up action plan he had so thoughtfully articulated came more or less to naught. The coalition that had been imaginatively put together through the 4000-kilometer march once more dissolved into its sectarian components.

V

The aftermath of the SWGM must have been deeply disappointing for Gadgil, but his love affair carried on regardless. In the first week of June 1992 I accompanied him on a trip down and up the Ghats. By now he and I had been collaborators for more than a decade: a book of ours had just been published; a sequel was in the process of being written. We had had countless conversations in Calcutta, Delhi, and Bangalore at the IISc.

I am by nature and temperament a creature of the city. As a scholar, too, I am more comfortable conversing with “dead” documents than living people. The archives I consult are located in state and national capitals. At the time, my field experience was restricted to a few weeks in the Himalaya, when I was working on my doctoral dissertation. I felt this lack keenly, but Gadgil felt it more keenly still.

Thus it was that, in June 1992, I found myself accompanying him on one of his regular visits to northern Karnataka. It was, as it happens, the very week of the Earth Summit in Rio de Janeiro, and it was typical of the man that where other Indian “environmentalists” made certain of their plane tickets to Rio, Gadgil chose to spend his customary one week a month in the fields and forests of the Western Ghats.

Our first night was spent in the Talgoppa Express which took us from Bangalore to the crest of the Ghats. From the railhead we descended down the Agahasini valley to the coastal town of Kumta. The drive was for the most part through degraded evergreen forests, a marker of whose condition was the weed eupatorium, a sun-loving plant a couple of meters high that had colonized many clearings. Of Latin American origin, this weed apparently reached Kerala on the backs of Malayali soldiers retreating from Burma during the Second World War. How it got to Burma we don’t know, but after it came to Kerala it spread rapidly northward and now covered large areas of coastal Karnataka as well.

Our drive through these disturbed forests provoked Gadgil into a discourse on the history of exotic plants in general. There was the coconut, which had contributed so greatly to Indian cuisine and culture. There were weeds like eupatorium which must be reckoned unwelcome intruders. Yet others had both benefits and costs, as in the various species of eucalyptus imported into India from Australia.

With its Australian cousin *Acacia auriculiformis*, eucalyptus had become ubiquitous in parts of the Western Ghats. These species were widely favored by the state Forest Department for they were not grazed by cattle, making it easier for officials to meet their planting targets. As we found, however, local villagers had mixed feelings about them. These trees provided fuel wood, but no fruit, fodder, or medicines.

These monocultural plantations newly raised made a striking contrast to the original vegetation of the Ghats. Specimens of these earlier forms dotted the area, chiefly in the form of sacred groves, this being of particular interest to Gadgil and being studied by one of his students, M.D. Subash Chandran.

Chandran, originally from Kerala, now taught at the Dr A.V. Baliga College in Kumta. We stayed with him and his wife, and in between splendid meals cooked by them—rich in fish caught in the estuary—we walked the sacred woodlands he had studied. In one patch twenty-five kilometers square he had identified as many as fifty-four sacred groves still protected by peasants. These served vital ecological functions, giving shelter to plants and animals and protecting water sources. Sadly, they had been bypassed altogether in official conservation efforts which privileged state action over popular knowledge and participation.

After a quick tour through the estuarine island of Masur-Lukkeri (where Gadgil once lived for extended periods, and where a school-teacher had taught him the Kannada script), we left Kumta for the town of Sirsi, perched on top of the Ghats. Sirsi and its neighborhood are dominated by Havik Brahmins who specialize in horticulture. Their majestic spice gardens depend vitally on leaf manure taken from nearby forests. A hundred years of unregulated use had left the forests badly depleted until, in 1979, a local environmental group stepped in. We spoke to its members—mostly enlightened Havik farmers—and learned how they planned to regulate lopping and rehabilitate the forests.

From Sirsi we turned further inland across the Carnatic Plateau and into the district of Dharwad. We were traveling from an area of lush vegetation and abundant rainfall toward a more arid terrain. From a social point of view this was signaled by our first sight of nomads, returning with their sheep to their villages before the

monsoon began. From an ecological viewpoint the transition was marked by the substitution of eupatorium by parthenium, another weed of Latin American origin.

Of this plant's entry into the region Gadgil had an even more interesting story to tell. It had first arrived in India with a consignment of American wheat which was stored in a godown near his home town, Pune. This godown lay downstream of the Panshet dam, and when that dam burst in 1961 its flood waters carried away the parthenium. The weed subsequently spread all over the Deccan. In Karnataka it was known derisively as Congress grass because, with its white flower atop a lean stalk, it rather resembled a Congress politician with his khadi cap.

Our drive ended in Ranibennur, where we had come to honor the great writer Shivaram Karanth and celebrate an environmental victory. A local NGO, the Samaj Parivartan Samudaya (SPS), had long opposed the destruction caused by a local factory owned by the house of Birlas, Harihar Polyfibres Ltd. This factory polluted the Tungabhadra River and preyed on the natural resources of the district.

The state government had taken the side of the factory. Together they had formed Karnataka Pulpwoods Ltd (KPL), to which had been allotted 75,000 acres of common land used extensively by villagers. When KPL bulldozed the existing vegetation and started replacing it with eucalyptus, SPS swung into action. They organized a series of satyagrahas and also took the case to the Indian Supreme Court. That process had begun in 1984; now, eight years later, the court had ruled against KPL, forcing it to shut down.¹⁷ Better still, SPS had been awarded the Indira Gandhi Pariyavaran Puruskar (a prestigious environmental awareness prize) by the Ministry of Environment and Forests in New Delhi, the award signifying a wider recognition of the justice of its struggle.

Gadgil and I had been associated with SPS for some time. So too had Shivaram Karanth who was, in fact, the first petitioner in the Supreme Court case. So this celebration was a dual one, and suitably happy, with songs and dances and a moving speech by the writer, where he told us that in living to the age of ninety he had consumed far too much of the earth's resources himself.

Ranibennur was our last stop. That night, after the meeting, we took the Kittur Express back to Bangalore. For Gadgil this was a week like any other but for me it had been richly educative. Over this rime we drove or walked through evergreen forests and estuaries, areca nut gardens and treeless plateau. We met farmers trying to manage their resources sustainably, biologists reconstructing ecological history, activists opposing the ravages of industry. We encountered

Latin American weeds and Australian trees, testimony to transnational ecological encounters in the centuries before the Rio Summit.

Through all this I talked little, being content to look around and listen to excerpts from my companion's vast stock of knowledge. He was pleased that I had come, and so too would have been my hero Marc Bloch—the historian who once said historians needed thinner notebooks and thicker boots.

VI

By the time of our trip through the Western Ghats, Gadgil's life was dominated by biodiversity rather than by forests narrowly conceived. This, the third stage of his work in India, was in some ways an integration as well as transcendence of the first two. His early work on sacred groves had alerted him to the need to protect small patches of refugia. Later, working on elephants in the large nature reserve of Bandipur, he had noticed how the management of the park was completely indifferent to the interests of villagers living in the vicinity. In 1982 he had written a thirty-seven page document, "An Indian Conservation Strategy," that sought to harmonize the claims of biodiversity conservation with the imperatives of social justice. This is a remarkable essay, anticipating Western debates on the subject by a decade or more. India, he noted, "surpasses in its biological wealth every other land mass of comparable size." But Indians had "unfortunately, done little to nurture this biological heritage;" to the contrary, they had "lost a greater proportion of it than any other land mass of comparable size."

The essay began with an overview of the ways in which modern Indians had decimated the biological diversity they had inherited from their forefathers: through the destruction of forest cover, the simplification of crop regimes, the building of large dams and the profit urges of industry. And yet despite the ravages of man there was much that remained: rich biological communities in upland and lowland, in deserts and along the coasts. How, asked Gadgil, "do we then go about salvaging what is still left of our magnificent biological heritage?" His answer lay in a shift away from "the traditional approach that emphasizes the protection of a few striking species of wild animals such as the rhinoceros or the tiger." Instead, argued Gadgil a full twenty years back, we should "reorient our choice of [protected] communities to try to achieve the maximum preservation of overall biological diversity." Small fragments disdained by conservationists obsessed with size could often be the last remaining samples of their ecotype. Remarkably, it was in a sacred grove in Kerala that scientists found a woody climber of the genus *Kunstleria*, previously unrecorded in India.

The orthodox approach to nature conservation, argued Gadgil, was flawed in an ecological sense, and from a social point of view as well. Thus, wildlife managers were instructed to “keep people away by force of arms.” But this was “neither feasible nor desirable.” There was a moral imperative to provide gainful employment as well as fuel and fodder to villagers living in and around protected areas. At the same time, “where such nature reserves attract economic activity such as tourism, we should ensure that the benefits from it flow entirely to the local population.”

This essay of 1982 provided an uncanny anticipation of global debates on biodiversity as they unfolded in the 1990s and beyond. These are debates to which Gadgil has enormously contributed. He has looked at the legal and international aspects of the problem, providing critical analyses of the implications of the Dunkel Draft, the WTO negotiations, and the Convention on Biological Diversity. He has written on the optimal size of nature reserves, on the impact of human intervention on species diversity, and on the relation of local communities to protected areas. He has popularized the notion of “Peoples Biodiversity Registers” which document and demonstrate the indigenous knowledge of formally unlettered people. All told, to my knowledge no scientist worldwide has done as much as Gadgil to deepen and democratize the idea and ideal of biodiversity conservation.

VII

Over a decade utterly formative for my intellectual development, Gadgil and I worked together. To begin with, our intellectual energies were pooled toward researching and writing an ecological history of India. But we also both had a keen interest in the developing environmental movement, in the struggles of forest-dependent peasants, dam-displaced tribals, and trawler-affected artisan fisher folk. These struggles, we hoped, would lead to suitable changes in public policy, such that the state would promote laws and technologies more sensitive to the environment and the needs of rural communities.

Gadgil and I wrote two books together, the second moving beyond history toward prescription. The books are in the public domain; they have been sometimes praised and sometimes very vigorously criticized. However, while cleaning up some papers recently I found a more activist document that we had coauthored and which apparently was never published. It was written toward the end of 1989, just after the fall of the Berlin Wall, just after the defeat of Rajiv Gandhi’s Congress government in the general elections of that year. The Congress regime had been widely accused of corruption, of being soft on

industry, and of a creeping authoritarianism. This last was manifest especially in a “Defamation Bill” that sought to impose strict curbs on the functioning of India’s free press.

The Congress had been replaced by a regime called the National Front, an alliance of populist, socialist, and regional parties which promised clean government as well as a more rural and Gandhian policy orientation. It was a minority government propped up by the support of the Communists on the left and the Bharatiya Janata Party (BJP) on the right. As changes of regime usually are, it was accompanied by a fairly extended honeymoon period when intellectuals and activists hoped for some *real* change from the new rulers: in part this was because the National Front had been voted out of power in several of the states it had previously controlled, and the hope was that this would drive home to them the importance of good governance.

Such was the background for the document which Gadgil and I wrote, and which we circulated to a wide variety of colleagues in the environmental community with the hope that with their criticisms and comments we could prepare a better statement still which could then be presented as a collective charter from India’s greens. It drew upon a decade of research on my part, and two decades of research on his part. But it also drew on the many conversations the two of us— and Gadgil especially—had with scientists, social scientists, public officials, and activists working in the environmental or natural resource management field. In so far as it embodies this collective thinking of certain sections of the Indian environmental movement, c.1989, the document seems relevant and is reproduced below in full.

ECOLOGY FOR THE PEOPLE

(Written circa November 1989)

1. India stands at the crossroads. That is the message of the elections just conducted. People everywhere have voted for a change in the way the affairs of the country are being run today; in states ruled by Congress as well as by constituents of the National and Left Fronts. That was also the message of the tens of thousands gathered at [the anti-big-dam rally] at Harsud in Madhya Pradesh. Obviously, there is a search on for an alternative path to development, for a strategy that would be sustainable, that would reverse the current trend of growing social and economic disparities.

2. Fortunately, there are hopeful signs of an emerging national consensus on many elements of such an alternative strategy. Above all these include the need to decentralize decision-making, to create rural employment as a matter of the highest priority and to provide a much more open, accountable system of governance. All these areas

are of great relevance to the concerns of environmentalists, for it is the centralized, bureaucratic decision-making with little public accountability that has been driving much of the short-sighted, destructive development. It is also such a process of development that has led to cornering of the benefits of development by narrow elite, exacerbating social and economic disparities and creating acute problems of rural poverty rooted in unemployment and underemployment.

3. This development process has emphasized immediate intensification of resource use with little thought for long-term consequences, or for efficiency of resource use. In the event resources have been used exceedingly wastefully, which has entailed substantial environmental and social costs. These costs have been passed on to the bulk of our population which remains poor, disorganized, and illiterate, and of course to unborn generations. The gross neglect of problems of rehabilitation of project refugees is one way in which such costs are inflicted on the weaker sections of society; alienation of the masses from any control over the resources of their locality and dedication of these resources to meet commercial needs is another. The same pattern of centralized, bureaucratic development has meant that the ongoing rural employment programmes have contributed little to the rehabilitation of degraded local environments.

4. Acknowledging the right of all citizens to know all that is going on in the country, to put in place monitoring of development programmes independently of the machinery administering these programmes, and ensuring that a narrow elite cannot impose decisions without a wide consensus involving all segments would be important steps toward eliminating these distortions. Full information regarding all development programmes as well as defense programmes involving rehabilitation (barring only specifically identified security-related matters) should be accessible to all citizens quite openly; indeed there should be strict penalties prescribed for anybody obstructing access to information and rewards for those who make special efforts to communicate it. Social and environmental benefit-cost analyses of all development projects must be taken up concurrently with the preparation of the Detailed Project Reports [DPRs]. While project authorities should have the responsibility for ensuring that such analyses are conducted, they should be obliged to organize them through independent agencies which are provided full access to all relevant information, and which in turn must be obliged to involve all concerned citizens in the exercise through public hearings in the relevant localities. Programmes for rehabilitation of refugees from the project, programmes of compensatory afforestation, treatment of catchment areas, etc. should also be formulated as an integral part of all development projects along with the preparation of

DPRs and their environmental and social cost-benefits should be similarly assessed by independent agencies in a process involving public hearings.

5. Such open scrutiny should also characterize all other government programmes at all scales ranging from gully plugging of small streams and selection felling from reserved forests to subsidizing smokeless *chulas* [wood stoves]. Decisions as to the desirability of such activities should necessarily involve local people; ideally the entire population in the form of *gram sabhas* [village councils]; as well as other institutions such as schools, voluntary agencies and of course *mandal panchayats* [local councils] and *zilla parishads* [district councils]. The key to bringing about such involvement would be complete access to all relevant government records to citizens, with strong disincentives for denial of access.

6. Granting the right to productive work would be an important step in conferring dignity to the large numbers of our poorer citizens. But it is important to ensure that the work they undertake shall focus on sustainable development of natural resources and on eco-restoration as far as possible in their own localities on state-owned, common and private lands. Only such an effort would ensure that in the long run these people could come to enjoy a better quality of life. To ensure that the work generated is carried out properly instead of in a shoddy, eco-degrading fashion, and that the workers do get paid due wages, the pertinent records should be open to public scrutiny. Furthermore, such employment programmes should also be subject to an independent monitoring by local voluntary agencies and educational institutions.

7. Finally, the local government at the village level should come to focus on good management of the local resource base of land, water, vegetation, and animal life. It is the poorer people in rural areas who suffer most from the degradation of this resource base and who could be best motivated to take good care of its health. Unfortunately they have today become its worst enemies, driven as they are by day-to-day compulsions of making two ends meet. A properly organized right to work programme should remove these compulsions. But that would not be enough, as another important component of the resource base—common lands and waters—has in many areas become no man's property. At the time of taking over these community resources the British insisted that while local people may have some privileges of their use, they shall have no rights. Therefore the local community today cannot keep out non-members nor regulate the behavior of their own group members in the use of the commons. While setting up *panchayati raj* [decentralized] institutions it is therefore essential that a new framework be developed for conferring both authority and responsibility on local people for good management of the commons.

The most appropriate social unit for taking on such responsibility would be a village/hamlet where everybody is in regular face to-face contact. Each such unit should be assigned its own common land and water to be ultimately governed by the whole community. The commons should remain state property with regulations even more stringent than the forest conservation act to assure its integrity [i.e. to prevent its diversion to commercial or industrial uses], but it should be first dedicated to meeting local subsistence needs, and only when these are fully met to supplying outside demands. In the long run local communities should maintain the resources of the commons with inputs of their own labor, and where necessary cash, helped only through the right to work programmes. The mandal panchayat structure should be appropriately designed to facilitate such management by villages/hamlets making up the panchayat area. 8. We believe that the time is right in the country to establish a number of such initiatives through a broad national consensus, initiatives that would go a long way toward reversing the current trends of environmental degradation and worsening of social disparities. We hope that the many strands involved in the environmental movement will come together to persuade parties of all political persuasions to implement these policies.

Although it is impossible to be certain from this distance in time, my surmise is that the inspiration and ideas in this document must mostly have been Gadgils. Anyway, the file where I came across this old document also had an array of responses, some approbatory, willing to sign the statement as it was, others thoughtfully critical. The sociologist Gail Omvedt pointed out that in her state, Maharashtra, the current right-to-work schemes tended to focus on “the hated rock-breaking.” Perhaps, she said, there was also a need for “the right not to work or at least to be freed from inhumane work. . . .” The ecological economist Anil K. Gupta suggested that we recommend discontinuing the massive subsidies enjoyed by the urban middle class. By making them pay a fair price for education as well as water and power, one might create a “resource replenishment” fund that could be directed toward enhancing the capabilities and life chances of the rural poor, particularly those living in high-risk environments prone to drought or floods. The socialist A.K. (“Dunu”) Roy—himself a pioneer of social-ecological research—saw in our proposal “the absence of an analysis of the nature of the political economy.” He thought that

even if the Right to Know, the Right to Work, and Panchayati Raj were to be legislated for by the present government, it would barely hamper the “development” process. The class forces would ensure that these rights get amalgamated into the general trend of impoverishment on one hand and enrichment on the other. . . [T]he

only way to upset this apple-cart... is by calling and organising for economic and social equality too. In other words, by wresting control of the economic process and resources from the rich. And this cannot be done by people like us who are themselves allied to the rich. It has to be done by the poor. We can only assist.

Dunu Roy concluded that “perhaps this document is a first step in a long road.” Gadgil and I would have agreed. However, the whole process ran aground when the National Front abandoned its “alternative development agenda” in favor of narrow caste politics. This took the form of implementing the Mandal Commission Report which demanded higher representation in the public services of “backward castes” dominant in the countryside, these constituting the backbone of the regionalist parties that made up the Front. In response, the BJP withdrew its support, seeking instead to renew its campaign to build a Ram temple in the town of Ayodhya.

For the next decade and more the politics of India was dominated by the divisive tendencies of caste and religion. Only in May 2004, with the defeat of the BJP and the coming to power of a Congress-led coalition supported by Left parties, did questions of rural development re-enter the domain of political debate. A Right to Information Bill has been passed by parliament, inspired by a bill in the state of Rajasthan, itself the product of a sustained campaign led by a remarkable group called the Mazdoor Kisan Shakti Sangathan (MKSS). Also passed by parliament is a National Employment Guarantee Act, which, like the Information Bill, is deeply inspired by the MKSS.

The MKSS campaigns, as also their intellectual articulations by the respected economist Jean Dreze (Belgian-born but long resident in India and now an Indian citizen) have focused on the importance of these two bills in ensuring public accountability, deepening political democracy, and enhancing social equity. These are all admirable ends but to them can easily be added one more, compatible with and complementary to the others—that of environmental sustainability. In that extension the work, old and new, of Madhav Gadgil can provide a very handy starting point.

VIII

As one who has so closely known Gadgil for a quarter of a century, let me single out and summarize what I see as the distinguishing features of his work.

First, there is his deep knowledge of his land and its people. I have spoken already of our field trip together. On another occasion, we got talking about the Western Ghats in the corridors of the Centre for Ecological Sciences at the IISc. Around us lay framed photographs taken by the botanist Cecil Saldanha and from a recent exhibition

featuring his work. I asked Gadgil to identify the locations. This he did with little difficulty. This photograph appeared to have been taken north of Siddapur; that one was most likely from somewhere close to the Karnataka-Goa border; the one on the far wall was certainly from the catchment of the Sharavathi river.

While he retains a special affection for his native Sahyadris, Gadgil has traveled extensively through rural India. In 1992, when we decided to write a constructive sequel to our depressing ecological history *This Fissured Land*, Gadgil said he had first to visit the north-east, the part of India he knew least. Fortunately a student of K.C. Malhotra's was doing a dissertation on shifting cultivators in Manipur. So Gadgil took his backpack and walked two weeks with this student, asking him about the ecology and social structure of the tribals and their hills, in exchange passing on a great deal of information new to the younger man.

Second, there is his profound intellectual originality. This is manifest in his work on forms of indigenous or non-modern conservation systems, in his analysis of different societies in terms of their "modes of resource use," in his inspired coinage of the term "omnivores" to characterize the ecological profligacy of the Indian elite. I should here acknowledge that the ideas that are original in our own coauthored books are all his. Much of the historical research contained in them is mine. But the analytical frameworks are, in essence, Gadgil's.

Third, there is the courage he has shown, quietly rather than polemically (in this he and I are complete contrasts!), in opposing intellectual fashion. He was one of the first Indian scientists to do field research. His left-wing tendencies notwithstanding, he was one of the first Indian environmentalists to recognize that blind opposition to the market would only play into the hands of inefficient producers and an undemocratic state. He is an agnostic and secularist who can yet see a role for sacred groves in the practice of modern conservation.

Fourth, there is the unity, in his mind and work, of the intellectual and practical agendas of environmental research. Gadgil is both a scientist and a practical social reformer who conducts original ecological research but also seeks to use it to improve the lives of people and the health of the natural environment. He has done basic research on forests and biodiversity, and in ecological anthropology and environmental history. He has also contributed to the reform of public policy in these realms. Like Radhakamal Mukerjee, the man who first coined the term "social ecology," Gadgil sees this as both a methodological as well as moral imperative. Like Mukerjee, he would argue that "applied human ecology is the only guarantee of a permanent civilization."

A late illustration of this practical bent is Project Lifescape, started by Gadgil to mark the birth centenary of the ornithologist Salim Ali. This aims at publishing an illustrated account of some 2500 species of micro-organisms, plants, and animals to create wide popular interest and a stake in the conservation of India's biological heritage. Although directed by an internationally renowned scientist, the project rests on the willing participation of a network of students and college teachers patiently built up over the years.

Salim Ali was himself one of Gadgil's early mentors. His example animates Project Lifescape, as does the work done with students and teachers of the Kerala Sastra Sahitya Parishad (KSSP). In the early 1980s, Gadgil worked alongside the KSSP in the campaign to save Silent Valley, one of the last remaining rain forests in the Western Ghats, from being drowned by a hydro-electric project. There he came into contact with M.K. Prasad, a botanist of subaltern background who has been one of the KSSP's most inspirational figures. Born into a home of poor toddy tappers, Prasad rose to become a university vice chancellor. All through he remained "that rare example of an Indian scientist, a person for whom recognition from the West matters little if at all." Their friendship, now two decades old, has undoubtedly furthered this Harvard-educated scientist's efforts at making his science more relevant and accessible to his people.

Fifth, there are Gadgil's deeply democratic instincts. These are expressed socially in the fact that his applied work has been on behalf of the "ecosystem people," rather than the omnivores. He has consistently promoted political decentralization, transparency in governance, and freedom of information. I had originally thought of calling this chapter "The *Scientific* Social Ecology of Madhav Gadgil," but then I realized the title was unduly restrictive. I think Gadgil is better understood as a thoroughgoing democrat whose lifelong endeavor has been toward democratizing science, democratizing the state, and not least democratizing the environmental movement. As he expressed it in an essay of 1997, "to prosper in this age we must once and for all abandon the bureaucratic culture of control and command and embrace a new democratic culture of share and inform. Only then can we hope to vanquish the forces of environmental destruction that have been gathering strength over these fifty years of independence.

I have been a beneficiary of Gadgil's democratic instincts myself. He is sixteen years older than I, an age difference that, in the Indian context, generally translates into a relationship of master and follower. But from the beginning he treated me as an equal. Early on we had a vigorous disagreement on the merits of sociobiology. As a student and friend of E.O. Wilson he was then somewhat in thrall of that then relatively novel approach. In fact he was close to being what

Wilson could never be, a *socialist* socio-biologist, probably the only such specimen anywhere in the world.

As for myself, I was from the first repelled by sociobiology's imperialist pretensions, its bid to take over the social sciences and the humanities with it. I had read Wilson and also critiques of his work. This convinced me that while it might indeed be possible to separate sociobiology from a right-wing political agenda, it remained a theory with limited applicability outside the natural world. In particular, Indian history and culture were too diverse and too unpredictable to fit into a model which assumed that social behavior was, in the ultimate instance, driven by an individual's genes.

My reading led to arguments that persuaded Gadgil to restrict sociobiology to the study of insects and animals. This set the precedent for our relationship, based on mutual respect for the other person's ideas and a willingness to change's one mind based on evidence. Gadgil's democratic instincts greatly impressed me, not least because I was coming into his terrain after five years in Calcutta, where Marxist egalitarian beliefs do not come in the way of professors treating their students somewhat like the Bengali (usually Hindu) landlord once treated his (usually Muslim) tenant.

Finally, there is his wholesale absence of cynicism. When I first met Gadgil he had not yet turned forty. He is now past sixty but retains still that slim, spare frame, that sprightly walk, that love of nature, that interest in (especially young) people, that determination to put science in the service of humanity, that deep and abiding faith in the future of his country. As I write this, he is engaged in Grafting a curriculum for "habitat learning" for the schools of India, following a mandate from the Supreme Court of India that "awareness of the environment and its problems . . . should be taught as a compulsory subject" in all the schools in the country.

Asked by the National Council of Educational Research and Training (NCERT) to devise such a curriculum, Gadgil and his co-workers have drafted a document steeped in experience, understanding, wisdom, and hope. Environmental education, they point out, cannot mechanically reproduce what textbooks say; it must "emphasize continual inquiry," on the teachers and among students as well. Its guiding principle should be "empowerment, rather than indoctrination;" its main focus the exposure of students "to the real-life world, natural and social, in which they live;" its main aims to help them "learn about the environment" and "learn through the environment" as well as "for the environment."

The NCERT document shows how students can complement laboratory experiments with field observations on soils, vegetation types, bird and animal diversity, and the human use and abuse of

nature. All this information could then be uplinked to a website which would be a “publicly accessible and transparent database on India’s environment,” continually updated and adequately reflecting the social as well as ecological diversity of India. What we have here is a new paradigm of education—the words that follow can only be Gadgil’s— “embodying the spirit of science, of democracy, and of caring for the environment.”

Viewing Gadgil’s career in the round it is tempting to make the criticism that he has not written enough, or at any rate not enough books. Here the contrast with his Western contemporaries is noticeable— with scientists such as Stephen Jay Gould, Jared Diamond, E.O. Wilson, Robert May, and others. As it happens these men are all Gadgil’s friends, not to say admirers, but who, unlike him, have distilled their knowledge in a series of hugely popular books for the general market. In terms of intellectual range Gadgil matches the best of them; in terms of field experience he probably exceeds them. He can write a clear and direct, though not always evocative, English prose. And he too has worked on themes of compelling ecological and human interest. Why then has he not published more books?

One reason could be the difference in cultural milieu. India is altogether a more sociable place to live in than the USA or Britain. It is far less oriented toward the protection of privacy, far less sympathetic to the withdrawal from human intercourse that the writing of books requires. Add to this the fact that the intellectual culture of India is more oral than written; more conducive to ideas being discussed in seminars and informal gossip sessions than via the medium of print. To these structural factors might be added aspects of personal orientation. Gadgil is, like his father and many other Indians, a *public* intellectual for whom the claims of a scientific career have often—too often?—been subordinated to the claims of social activism and social reform. Asked to join a Western Ghats march or draft a comprehensive curriculum for Indian schools, Gadgil finds it impossible to turn his back and write away in his office instead. Finally, this scholar of biodiversity so glories in the diversity of his culture that he would hardly want to pass up the chance to deepen his acquaintance with it. If one gives Gadgil a choice—would you rather spend the next fortnight on a boat with fisher folk you have never before studied, or write a chapter of a book?—there is little doubt in which direction his heart and feet will take him.

This said, I still think that the criticism is fair. Too much of Gadgil’s best writing is hidden away in fugitive documents—official as well as non-official—rather than in a more systematic and public distillation presented in the shape of published books. On the other hand he has had a significant influence on Indian science, not least through the creation of a first-class center of ecological research, now in the

capable hands of a group of outstanding younger scientists. And he has had a still more significant influence on public policy and public debate, on the ways in which the Indian people and the Indian state have come to interpret, understand, and act upon the natural environment. I have already made the claim that Chandi Prasad Bhatt was the first environmentalist of the poor. To now claim that Gadgil has perhaps had more practical influence within his own country than any other scientific ecologist would open me to the charge of being an Indian chauvinist. So let me only say that he has had a wider social impact than some who have written more—and better—books. And that he would have it this way.

Let me, in the end, recall what Wassily Leontief told Madhav Gadgil when he was a young boy. The son may have chosen early to depart from his father's profession, but he retained a profound respect for his father and for the tradition that nurtured him. For, always excepting Gandhi and Tagore, the most original as well as most influential thinkers in modern India have come from Pune or the Pune region. In most ways that matter, then, Madhav Gadgil is his father's son, and the child of a city to which he, on his retirement from the IISc, now returns. But while he might retire to Pune, he does not belong to Pune alone.

End